

**REDUCING SAMPLES OF HOT MIX ASPHALT TO TESTING SIZE
FOP FOR AASHTO T 328****Significance**

- 02 Samples of bituminous paving mixes taken in accordance with the FOP for AASHTO T 168, or as required by individual approved test methods, are composites and are typically large in size. Materials sampled in the field need to be reduced to appropriate sizes for testing. It is extremely important that the procedure used to reduce the field sample not modify the material properties.

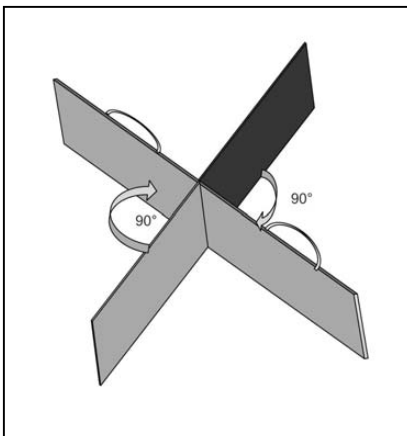
Scope

- 03 This method covers three procedures for reducing samples of Hot Mixed Asphalt (HMA) to testing size. The reduced portion is to be representative of the original sample.
- Method A – Mechanical Splitter
 - Method B – Quartering
 - Method C – Riffle Splitter
 - A combination of these methods may be used if approved by the agency.

Apparatus**General**

- 04
- Thermostatically controlled oven capable of maintaining a temperature of at least 230°F or sufficient to heat the material to a pliable condition for splitting.
 - Non-contact temperature measuring device.
 - Agency-approved release agent free of solvent or petroleum-based material that could affect asphalt binder.
 - Metal spatulas, trowels, straightedges, tapping knives, for removing HMA samples from the quartering device, cleaning splitting surfaces, etc.
 - Miscellaneous equipment including hot plate, non-asbestos heat-resistant gloves or mittens, pans, buckets, and cans.

**Oven**

**Mechanical Splitter****Quartering Template**

- **Mechanical Splitter** having four equal width chutes discharging into four appropriately sized sample receptacles. Splitter to be equipped with a receiving hopper that will hold the sample until the release lever is activated.
 - Four sample receptacles of sufficient capacity to accommodate the reduced portion of the HMA sample from the mechanical splitter.
 - Refer to AASHTO T 328, Figures 1 through 3, for configuration and required dimensions of the mechanical splitter.
-
- **Quartering Template** formed in the shape of a cross having equal length sides at right angles to each other. Manufactured of metal that will withstand heat and use without deforming. The sides of the quartering template should be sized such that the length exceeds the diameter of the flattened cone of HMA by an amount allowing complete separation of the quartered sample. (AASHTO T 328 requires length of the sides to be 1.1 times the diameter of the flattened cone of HMA). Height of the sides must exceed the thickness of the flattened cone of HMA.
 - Non-stick mixing surface that is hard, heat-resistant, clean, level, and large enough to permit HMA samples to be mixed without contamination or loss of material.
 - Square-tipped, flat-bottom scoop, shovel or trowel for mixing HMA prior to quartering.



Riffle Splitter

- **Riffle Splitter** having a minimum of eight equal width chutes discharging alternately to each side. Minimum chute width must be at least 50% larger than the largest particle size.
- Hopper or straight edged pan having width equal or slightly smaller than the assembly of chutes in the riffle splitter to permit uniform discharge of the HMA through the chutes without segregation or loss of material.
- Sample receptacles of sufficient width and capacity to receive the reduced portions of HMA from the riffle splitter without loss of material.

Sampling

Obtain samples according to the FOP for AASHTO T 168.

Sample Preparation

The sample must be warm enough to separate. If not, warm in an oven until it is sufficiently pliable to mix and separate easily. Do not exceed either the temperature or time limits specified in the test method(s) to be performed.

Selection of Procedure (Method)

Select procedure for sample reduction according to agency requirements.

Method A or C is preferred due to the speed with which samples are reduced to testing size. With Method B (Quartering), the repeated mixing and quartering process allows samples to cool rapidly.

The size of the original sample may determine which method is used.

Procedure

Method A – Mechanical Splitter

- 15 1. After inspecting the apparatus for cleanliness, apply a light coating of approved release agent to all splitter surfaces that will contact HMA.
2. Inspect the hopper gates to be sure they are secured in the closed position.
3. Position the four sample receptacles to receive reduced HMA portions without loss of material.
- 16 4. Remove the sample from the agency-approved container(s) and place in the mechanical splitter hopper. Avoid segregation, loss of HMA or the accidental addition of foreign material.
5. Release the handle allowing the HMA to drop through the divider chutes and discharge into the four receptacles.
- 17 6. Inspect splitter surfaces for aggregations of HMA or mastic. If present, clean these surfaces such that the adherent material discharges into the appropriate receptacles.
7. Close and secure the hopper gates.
- Note:** It is possible at this point that material contained in opposite receptacles would equal the required sample size. If this is the case, combine the material from opposite receptacles for the sample.*
- 18 8. Further reduce the remaining HMA as needed. Reintroduce material contained in selected receptacles from opposite corners.
9. Repeat the splitting process until an appropriate sample size is obtained for the first test.
- 19 10. Continue the process with the unused portion of the HMA until samples have been obtained for all required tests.
11. Retain and properly identify the remaining unused portion of the HMA sample for further testing if required by the agency.

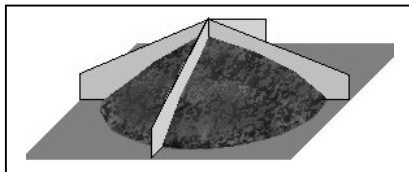


Reduced sample

Note 1 - Unless the sample size is grossly in excess of the minimum or exceeds the maximum test size use the sample as reduced for the test.

Method B – Quartering

1. Heat quartering tools to approximately 230°F (Metal quartering template, scoop or trowel).
2. If needed, apply a light coating of release agent to quartering template.
3. Remove the sample from its container and place in a conical pile on a clean, hard, non-stick surface large enough to permit mixing without contamination or loss of material.
4. Mix thoroughly a minimum of three times using the heated scoop or trowel to turn the sample. Be certain to insert the scoop to the center of the pile to ensure that the entire mass of HMA is being mixed. With the last turning, form again into a conical pile.
5. Flatten the conical pile to a uniform diameter and thickness where the diameter is four to eight times the thickness.
6. Divide the flattened cone into four equal quarters using the quartering template. Press the template through the thickness of the flattened cone assuring complete separation.
7. Leaving the quartering template in place, remove two diagonally opposite quarters and return them to the sample container. Be certain to remove all aggregations of HMA and mastic.
8. Remove the quartering template and combine the remaining quarters, again forming a conical pile.
9. Repeat steps 4 through 8 until a sample of the required size has been obtained. The final sample must consist of the two remaining diagonally opposite quarters.
10. Continue the process with the unused portion of the HMA until samples have been obtained for all required tests.
11. Retain and properly identify the remaining unused portion of the HMA sample for further testing if required by the agency.



**Quartering Template
(In Place)**

Note 1 - Unless the sample size is grossly in excess of the minimum or exceeds the maximum test size use the sample as reduced for the test.

Method C – Riffle Splitter

- 32 1. Heat splitting tools not to exceed 230°F. Inspect the riffle splitter for cleanliness and that receptacles are in place to receive the reduced portions of the HMA.
2. Apply a light coating of approved release agent to splitting surfaces (hopper or straight edged pan, chutes, receptacles).
3. Carefully empty the HMA from the sample container into the hopper or straight edged pan without loss of material. Uniformly distribute from side to side of the hopper or pan.
- 33 4. Discharge the HMA into the splitter at a uniform rate, allowing the HMA to flow freely through the chutes.
5. Inspect splitter surfaces for aggregations of HMA or mastic. If present, clean these surfaces such that the adherent material discharges into the appropriate receptacles.
6. Replace the two receptacles containing the split portions of HMA with two empty ones.
- 34 7. Using one of the two receptacles containing HMA from the first split, repeat steps 4 and 5 until the HMA contained in one of the two receptacles is the appropriate size for the required test.
8. After each split, remember to inspect splitter hopper and chute surfaces for aggregations of HMA or mastic. If present, clean these surfaces such that the adherent material discharges into the appropriate receptacles.
- 35 9. Repeat the splitting process with the unused portion of the HMA until samples have been obtained for all required tests.
10. Retain and properly identify the remaining unused portion of the HMA sample for further testing if required by the agency.

Note 1 - Unless the sample size is grossly in excess of the minimum or exceeds the maximum test size use the sample as reduced for the test.

Sample Identification

1. Identify the sample as required by the agency.
2. Samples shall be submitted in agency-approved containers and secured to prevent contamination and loss of material.

Tips!

- Remember, the reduced sample must be representative of the whole. 36
- Proceed quickly so that splitting is done when the material is hot.
- Check agency requirements about what splitting device(s) or method(s) may be used.
- Method A or C is preferred.
- With Method A, further reduction requires using HMA from diagonally opposite receptacles. 37
- With Methods A or C, inspect splitter surfaces for build-up of HMA aggregations or mastic. Ensure they are cleaned such that the material falls into the appropriate receptacles before continuing with another split.
- With Method B remember that the final sample consists of the two remaining diagonally opposite quarters.

